

# C2C Fundamentals with Confidence Rating

## Background Information

### 1. Personal Information:

Name:

Teacher:

### 2. School:

☐ William S. Cohen Middle School

☐ UTC

☐ Reeds Brook Middle School

☐ Hermon High School

☐ Hermon Middle School

☐ Old Town High School

☐ James F. Doughty Middle School

☐ Bangor High School

☐ Leonard Middle School

☐ Hampden Academy

Other (please specify)

### 3. Create your "identification code":

**Enter month and day of your birthday followed by first and last initials. For example Hannah Montana was born on November 23rd, so her identification code is 1123HM.**

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## Fundamental Physical Concepts

Please answer all of the questions to the best of your ability. In some cases there may be more than one correct answer. However, each question has only one BEST answer. Choose the SINGLE BEST ANSWER from the choices for each question.

**Sue cuts a straight and uniform board into three differently sized pieces. Each piece has the same width and height, but different lengths. A is shortest, C is longest.**



**4. Which piece has the greatest volume?**

- ☐ a. Piece A
- ☐ b. Piece B
- ☐ c. Piece C
- ☐ d. They all have the same volume.
- ☐ e. It is impossible to tell without making more measurements.

**5. How sure were you on your answer for the previous question?**

	Very sure	Somewhat sure	Only a little bit sure	I'm guessing
Choose one:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**6. Which piece has the greatest density?**

- ☐ a. Piece A
- ☐ b. Piece B
- ☐ c. Piece C
- ☐ d. They all have the same density.
- ☐ e. It is impossible to tell without making more measurements.

**7. How sure were you on your answer for the previous question?**

	Very sure	Somewhat sure	Only a little bit sure	I'm guessing
Choose one:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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### 8. Which piece has the greatest mass?

- ☐ a. Piece A
- ☐ b. Piece B
- ☐ c. Piece C
- ☐ d. They all have the same mass.
- ☐ e. It is impossible to tell without making more measurements.

### 9. How sure were you on your answer for the previous question?

	Very sure	Somewhat sure	Only a little bit sure	I'm guessing
Choose one:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Fundamental Physical Concepts

**10. A solid rubber ball sinks when placed in water. What will happen if the ball is cut in half and one of the halves is released underwater?**

- ☐ a. The smaller piece will rise.
- ☐ b. The smaller piece will sink.
- ☐ c. The smaller piece will stay motionless.
- ☐ d. The smaller piece will dissolve.
- ☐ e. There is no way to predict what will happen.

**11. How sure were you on your answer for the previous question?**

Very sure

Somewhat sure

Only a little bit sure

I'm guessing

Choose one:

☐☐☐☐

**12. A pebble is dropped into a cup of water and sinks to the bottom of the cup. A solid metal bead of exactly the same size is dropped into the same cup and sinks to the bottom of the cup. How do the pebble and the metal bead compare?**

- ☐ a. The metal bead and the pebble have the same density.
- ☐ b. The metal bead and the pebble are the same mass.
- ☐ c. The metal bead and the pebble are denser than water.
- ☐ d. The metal bead and the pebble contain the same materials.
- ☐ e. The metal bead and the pebble are as dense as the water.

**13. How sure were you on your answer for the previous question?**

Very sure

Somewhat sure

Only a little bit sure

I'm guessing

Choose one:

☐☐☐☐

## Fundamental Physical Concepts

**14. Scientists say a metal doorknob indoors often feels cold to you because:**

- ☐ a. Cold from the doorknob goes into your hand.
- ☐ b. Warmth from your hand goes into the doorknob.
- ☐ c. Cold moves from the doorknob into your hand.
- ☐ d. Warmth is pulled from the doorknob by your hand.
- ☐ e. Metals are always colder than air.

**15. How sure were you on your answer for the previous question?**

Very sure

Somewhat sure

Only a little bit sure

I'm guessing

Choose one:

☐☐☐☐

**Two identical jars are placed on a table with a light bulb between them. The bulb is turned on. One jar is filled with water and the other jar is filled with black ink. There is a thermometer hanging in each jar.**



**16. What do you think will happen?**

- ☐ a. The jar with water will be hotter than the jar with black ink.
- ☐ b. The jar with black ink will be hotter than the jar with water.
- ☐ c. There will be no difference in the temperature of the two jars.
- ☐ d. The temperature in both the jars will drop.
- ☐ e. The temperature in the jar with black ink will first drop and then increase.

**17. How sure were you on your answer for the previous question?**

Very sure

Somewhat sure

Only a little bit sure

I'm guessing

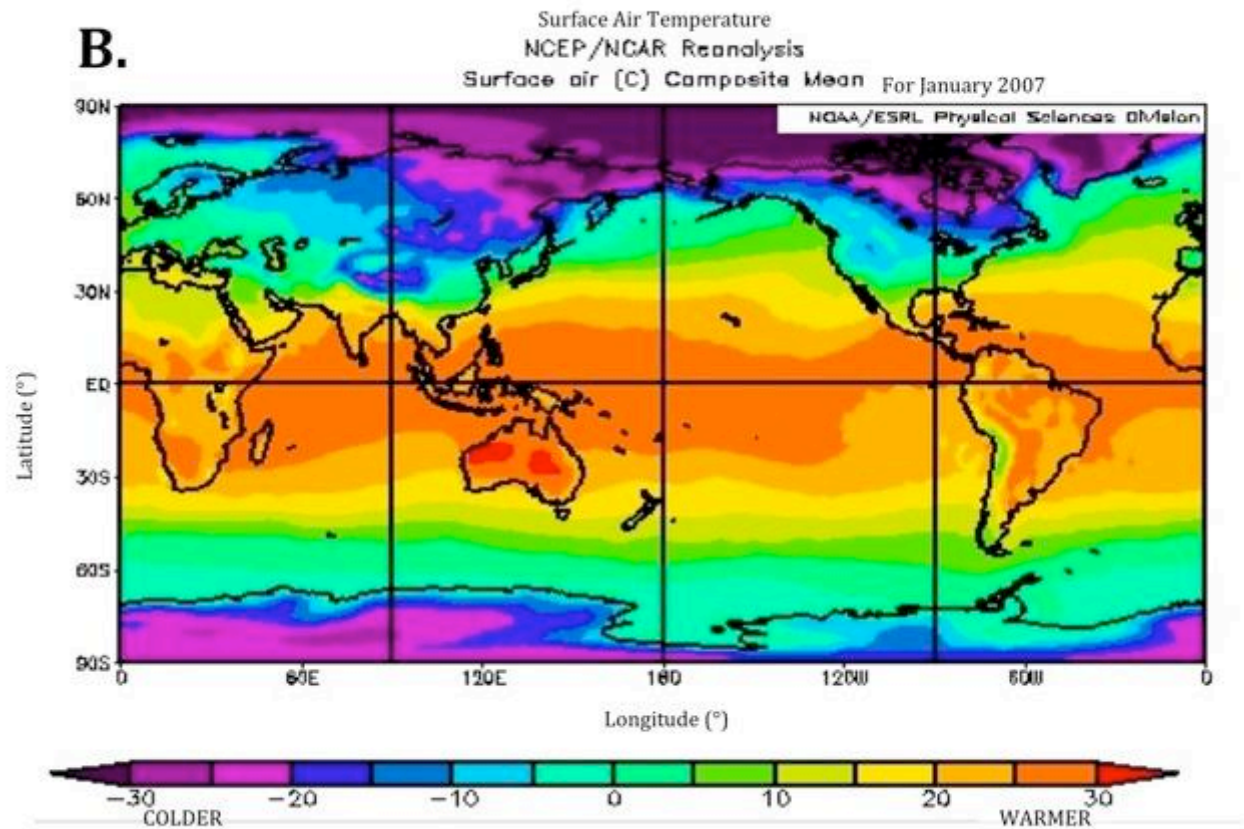
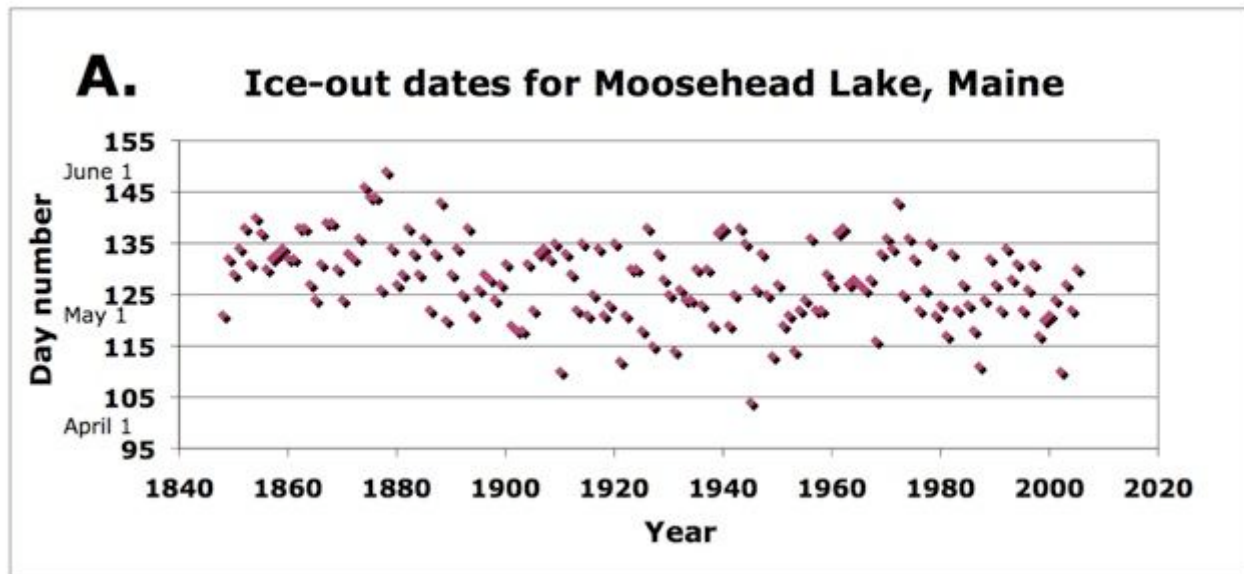
Choose one:

☐☐☐☐

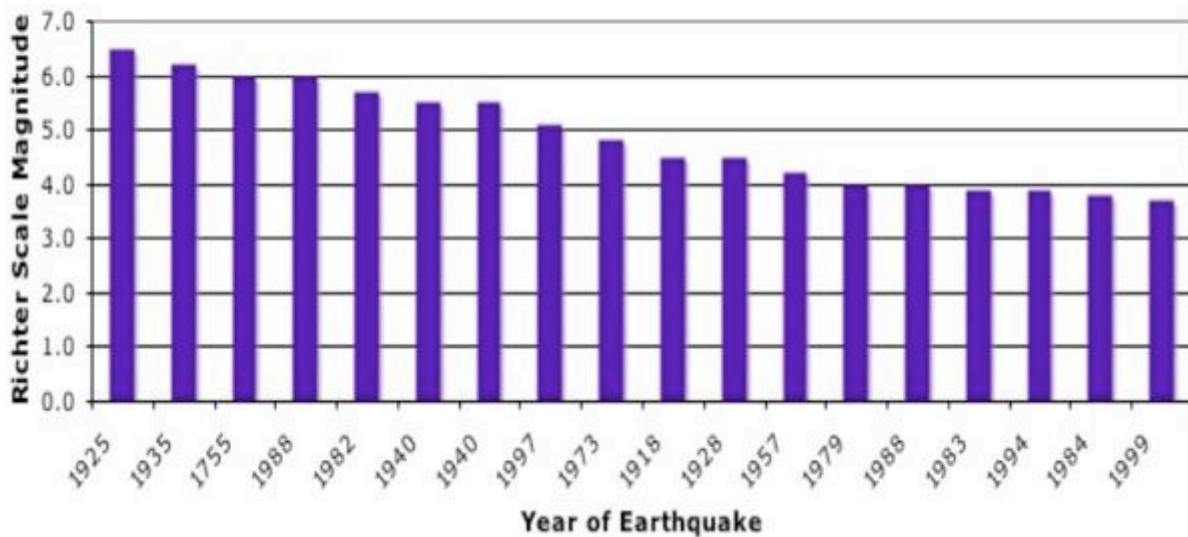
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## Fundamental Physical Concepts

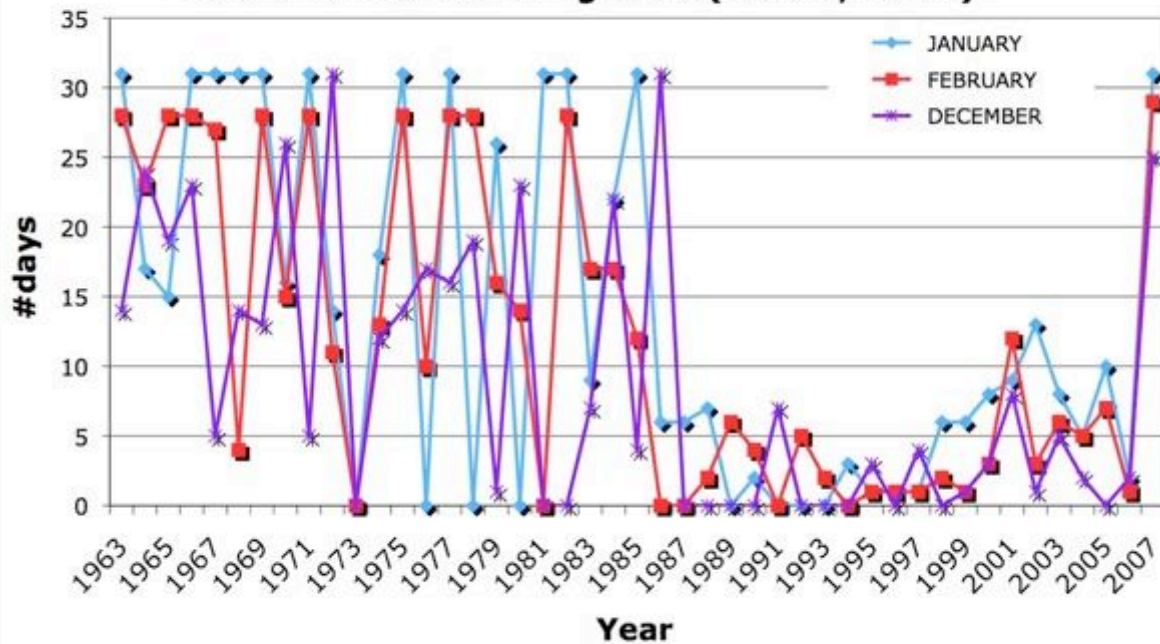
Refer to the next four graphs to answer question #8 below.



**C.** Year and magnitude of the 18 largest earthquakes felt in Maine



**D.** Number of days during winter months with more than 1" of snow on the ground (Belfast, Maine)



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### 18. Which of the graphs above shows a time-series?

- ☐ a. A
- ☐ b. B
- ☐ c. C
- ☐ d. D
- ☐ e. only 2 of the graphs
- ☐ f. only 3 of the graphs

### 19. How sure were you on your answer for the previous question?

Very sure

Somewhat sure

Only a little bit sure

I'm guessing

Choose one:





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### You're finished!

Thank you!

Acknowledgements:

Many of the questions on this survey were developed by the MOSART (Misconceptions-Oriented Standards-based Assessment Resources for Teachers) Team led by Dr. Phil Sadler, Harvard-Smithsonian Center for Astrophysics. See [http://www.cfa.harvard.edu/smgphp/mosart/about\\_mosart.html](http://www.cfa.harvard.edu/smgphp/mosart/about_mosart.html) for more information.